

Appl. No. : 10/654,542
Filed : September 2, 2003

REMARKS

Claims 1-7 and 9-27 were pending and Claim 8 was canceled prior to entry of the amendments herein. Claims 14 and 27 are amended herein and Claim 24 is canceled herein.

Request for Entry of Amendments

Claims 14 and 27 are amended to recite a spring constant of the process surface being greater than a spring constant of the pressure member. These amendments are fully supported by the specification and claims, as originally filed, by, for example, original Claim 24 (now canceled). The amendments do not present any new issues, as the added limitations were already in Claims 1 and 24. Applicants respectfully request entry of these amendments, as they do not change the scope of the claims and do not require a new search.

Rejections Under 35 U.S.C. §102

Claims 14-21 and 25-27 are rejected under 35 U.S.C. §102(e) as being anticipated by Chen et al., U.S. Patent No. 6,857,945. The nonobviousness of Claims 14-21 and 25-27 is discussed in the section below concerning the §103 rejections.

Rejections Under 35 U.S.C. §103

Claims 1, 3-7, 10-13, and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chen. Claims 2, 22, and 23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Kajiwara et al., U.S. Patent Publication No. 2002/0115397. Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Shendon, U.S. Patent Publication No. 2001/0044268. Applicants respectfully disagree that Claims 1-7, 9-13 and 22-24 are unpatentable over the cited references, alone or in combination, and traverse the rejections under §103. Claim 24 has now been canceled. The patentability of Claims 14-21 and 25-27 will also be discussed here.

Chen et al. do not disclose or suggest a spring constant of the process surface that is greater than a spring constant of the pressure member, as recited in independent Claims 1, 14 (as amended), and 27 (as amended). As noted by the Examiner, none of the cited references

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discloses a spring constant of the process surface being greater than the spring constant of the pressure member. However, the Examiner contends that “it would be within the level of ordinary skill in the art to have a process surface with a higher spring constant than the pressure member in order to counter the pressure member with ample force in order to properly process [the] wafer.” None of the cited references even discloses a compressible process surface, much less a process surface having a greater spring constant than that of the pressure member. None of the cited references teaches any relationship between these two spring constants. Applicants respectfully submit that, contrary to the Examiner’s assertion, the process surface does not need to be compressible and does not need to have any spring constant, much less a greater spring constant than the pressure member, in order to properly process the wafer. The Examiner is confusing spring constant with force. A completely rigid process surface can counter the force from the pressure member.

Furthermore, Chen et al. teach applying different pressures to different radial regions of the substrate to compensate for non-uniform polishing rates due to non-uniform polishing rates cause by other factors or due to non-uniform thickness of the substrate. See Chen et al, at col. 4, lines 37-51. Thus, because the substrate may have non-uniform polishing rates and/or non-uniform thickness, based on the teachings of Chen et al., the skilled artisan would not employ a spring constant of the process surface to be greater than the spring constant of the pressure member. Therefore, it would not have been obvious to modify the Chen et al. apparatus to have a process surface with a higher spring constant than the pressure member, as Chen et al. teach away from having a process surface with a higher spring constant the pressure member. Similarly, Kajiwara et al. and Shendon also teach to apply different pressures to different parts of the substrate. See Kajiwara et al., at paragraph [0080]; Shendon, at paragraph [0047]. Shendon specifically teaches that the carrier 24 “may be used to reduce the pressure [between the pad 22 and the substrate 12] at the center of the substrate 12 to address center over-polishing.” Shendon, at paragraph [0047].

Furthermore, the Examiner states that the force applied by the Chen carrier “can be controlled” to be constant pressure. However, mere capability to control the force applied is not recited in the pending claims. The fact that something “can” be modified or used in a manner that meets the claims does not make it obvious to do so, especially given the teaching away from

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constant pressure from the cited references themselves. See In re Gordon, 221 U.S. P.Q. 1125, 1122 (Fed. Cir. 1984).

Thus, Claims 1, 14 (as amended), and 27 (as amended) are patentable, as they are not obvious over the cited references, either alone or in combination. Claims 2-7, 9-13, 15-23, 25, and 26, which depend from and include all of the limitations of Claim 1, 14 (as amended), or 27 (as amended), are also patentable over the cited references.

Conclusion


Applicants respectfully submit that all of the pending claims are patentably distinguishable over the art of record. The cited references, either alone or in combination, do not teach or suggest Applicants' claimed invention.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: June 19, 2007

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AMEND

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